Cancer Risk Prediction Models: A Workshop on Development, Evaluation, and Application

May 20-21, 2004

Washington Marriott
1221 22nd Street, NW
Washington, DC 20037

Cosponsored by:

Division of Cancer Control and Population Sciences, NCI
Division of Cancer Epidemiology and Genetics, NCI
Office of Women’s Health, NCI

Goals and Objectives:

• Identify cancer risk prediction model applications and their usefulness in planning intervention trials; estimating the population burden of disease; creating benefit/risk indices and clinical decision making processes; and designing prevention strategies

• Discuss the strengths and limitations of cancer risk prediction models in current use and under development

• Discuss methodological issues relevant to the evaluation, validation, and discrimination of cancer risk prediction models

• Identify ways to improve current and future cancer risk prediction models, incorporating new clinical, environmental, and genetic data

• Identify research needs and population data resources for future cancer risk prediction modeling and validation; disseminate this information to the scientific community
Thursday, May 20, 2004

8:00 a.m. Registration and Continental Breakfast

8:30 a.m. 
**Introduction and Perspectives: Cancer Control and Population Sciences**
*Robert Croyle—Director, Division of Cancer Control and Population Sciences, National Cancer Institute*

**Introduction and Perspectives: Cancer Epidemiology and Genetics**
*Robert Hoover—Director, Epidemiology and Biostatistics Program, Division of Cancer Epidemiology and Genetics, National Cancer Institute*

8:45 a.m. **Workshop Overview and Objectives**
*Andrew Freedman*

9:00 a.m. **Session I: Applications of Cancer Risk Prediction Models**
*Moderator: Andrew Freedman*

Clinical Use of Risk Prediction Models
*S: Laura Esserman*

Estimating Population Burden of Disease
*S: Karen Kuntz*

Application of Cancer Risk Prediction Models: Intervention Trials
*S: Joe Costantino*

10:00 a.m. **Session II: Cancer Risk and Susceptibility Gene Prediction Models in Use and Development** (Oral Presentation followed by Poster Session)

A Breast Cancer Prediction Model Incorporating Familial and Personal Risk Factors
*S: Jack Cuzick*

Poster Session
*Rooms: Thomas Room and Salon C*

11:00 a.m. **Session III: Goals and Issues in the Development of Cancer Risk Prediction Models for Various Purposes**
*Moderator: Graham Colditz*
*Panelists: Mitchell Gail, Bernard Rosner, Beverly Rockhill, Colin Begg*
Topics to be discussed:

Developing Risk Models

• to incorporate clinical, epidemiologic, and/or biological/genetic markers (e.g., melanoma vs. Gail Model)
• for rare vs. common cancers (e.g., ovary vs. breast)
• using different design methodologies and data sources (e.g., cohorts vs. case-control vs. expert opinion)
• using specialized vs. generalized populations
• for clinical decision making
• for individual vs. population-wide prevention strategies

12:30 p.m. **Working Lunch**
Lessons Learned From Cardiovascular Risk Models: Experience from the Framingham Study  
*Speaker: Lisa Sullivan*

1:15 p.m. **Session IV: Risk Assessment Models for Predicting Cancer Susceptibility Genes and Cancer Risk**  
*Moderator: Daniela Seminara*

The BOADICEA model of genetic susceptibility to breast and ovarian cancer: updating, validation and predictions  
*Speaker: Antonis Antoniou*

Modifiers of Cancer Risk in BRCA1/2 Mutation Carriers: Study Design and Analysis Issues  
*Speaker: Tim Rebbeck*

Susceptibility Prediction in Familial Colon Cancer  
*Speaker: Giovanni Parmigiani*

Risk Assessment for HNPCC  
*Speaker: Chris Amos*

Genetic Susceptibility Risk Models in Clinical Decision Making  
*Speaker: Susan Domchek*

3:30 p.m. **Break**
3:45 p.m.  **Session V: Preliminary Discussion of Key Objectives and Research Gaps**  
(To be finalized on Friday, with report by panel members)  
*Moderator: Patricia Hartge*

Identify research issues, gaps, priorities, and resources needed to advance the field of cancer risk prediction. Make specific recommendations for implementation.

**Breakout Discussion Sessions:**

- **Session 1: Salons A&B**  
  Risk prediction models for clinical decision making, intervention studies, and population-based prevention strategies (focus on breast)  
  *Breakout leaders: Joe Costantino, Jack Cuzick, Laura Esserman, and Victor Vogel*

- **Session 2: Room 3017**  
  Risk prediction models for clinical decision making, intervention studies, and population-based prevention strategies (focus on lung, colorectal, melanoma, and cancers other than breast)  
  *Breakout leaders: Peter Bach, Graham Colditz, Ernie Hawk, and Tom Imperiale*

- **Session 3: Logan Room**  
  Risk prediction models for genetic susceptibility  
  *Breakout leaders: David Euhus, Judy Garber, and Tim Rebbeck*

- **Session 4: Room 3016**  
  Risk prediction model evaluation and validation  
  *Breakout leaders: Michael Kattan, Dan McGee, Martin Schumacher, and Ewout Steyerberg*

5:30 p.m.  **Poster Session Revisited** (*Light Refreshments*)

6:30 p.m.  **Dinner on your own at nearby restaurants** (*in small groups*)
Friday, May 21, 2003

7:30 a.m.  **Continental Breakfast**

8:00 a.m.  **Session VI: Validation and Evaluation Methodology**  
*Moderator: Susan Hilsenbeck*

General Talk on Criteria for Model Assessment  
*Speaker: Ruth Pfeiffer*

Variability Explained: Calibration, Goodness of Fit, and Unbiased Estimation  
*Speaker: Dan McGee*

Comparing the Accuracy of Prediction Models  
*Speaker: Michael Kattan*

Assessment of Prediction Error of Risk Prediction Models  
*Speaker: Martin Schumacher*

9:30 a.m.  **Break**

9:45 a.m.  Presentation on Current Population Resources for the Development and Validation of Cancer Risk and Susceptibility Prediction Models  
*Speaker: Daniela Seminara*

10:00 a.m.  **Session VII: Discussion, Summary and Future Research Directions and Wrap-Up** (This will finalize the discussion on the previous day.)  
*Moderator: Rachel Ballard-Barbash*

- **Report from Breakout Session 1:** Risk prediction models for clinical decision making, intervention studies, and population-based prevention strategies (focus on breast)
- **Report from Breakout Session 2:** Risk prediction models for clinical decision making, intervention studies, and population-based prevention strategies (focus on lung, colorectal, melanoma, and cancers other than breast)
- **Report from Breakout Session 3:** Risk prediction models for genetic susceptibility
- **Report from Breakout Session 4:** Risk prediction model evaluation and validation

Noon  **Adjourn**